

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
12 September 2003 (12.09.2003)

PCT

(10) International Publication Number
WO 2003/074102 A3

(51) International Patent Classification⁷: **A61M 37/00**,
1/00

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(21) International Application Number:
PCT/IL2003/000165

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(22) International Filing Date: 4 March 2003 (04.03.2003)

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE,
SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
148486 4 March 2002 (04.03.2002) IL
148567 7 March 2002 (07.03.2002) IL
150729 14 July 2002 (14.07.2002) IL

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI,
SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

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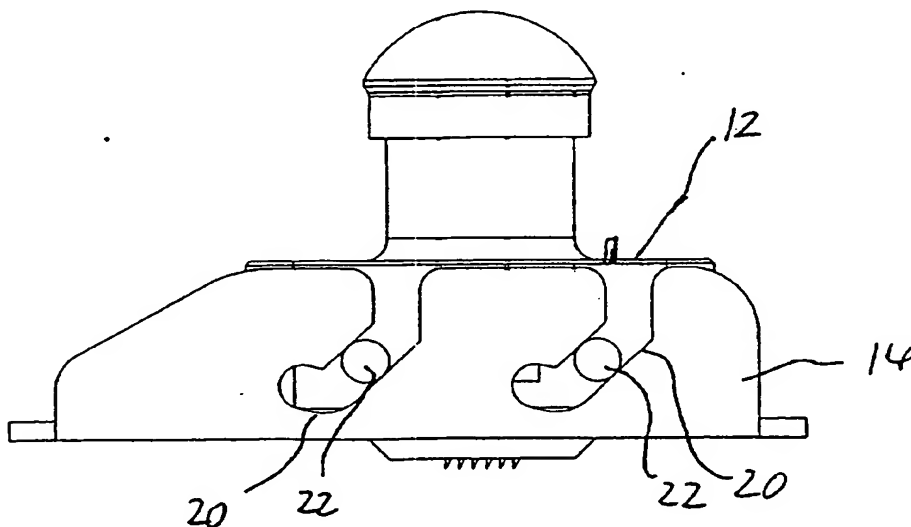
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Published:

— with international search report

[Continued on next page]

(54) Title: DEVICES AND METHODS FOR TRANSPORTING FLUID ACROSS A BIOLOGICAL BARRIER



(57) **Abstract:** A device (10) and method for transporting fluids across biological barriers enhances penetration of a biological barrier by the use of directional insertion, preferably with asymmetric microneedles (18) and/or microneedles (18) with sharp edges. Additionally, or alternatively, adhesion followed by alteration of contact geometry is employed to stretch the biological barrier across the microneedles (18), thereby also enhancing penetration. Also disclosed is a device (10) and method which combine shallow penetration by hollow microneedles (18) with jet injection via the microneedles (18) to achieve a total liquid penetration depth greater than the mechanical penetration depth of the microneedles (18).